

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Application No. 09/892,845
Attorney Docket No. Q65157

REMARKS

Claims 1-4 are canceled. Claims 7-9 are added. Therefore, claims 5-9 are all the claims pending in the application.

I. Claims 1-4:

The Examiner maintains the rejection of claims 1 and 2 under 35 U.S.C. § 103(a) as being obvious over Applicants' admitted prior art (APA) in combination with Ryang and claims 3 and 4 under 35 U.S.C. § 103(a) as being obvious over the APA in combination with Miyao.

Claims 1-4 are canceled; therefore, these rejections are moot.

II. Claims 5 and 6:

The Examiner maintains the rejection of claims 5 and 6 under 35 U.S.C. § 103(a) as being obvious over the APA in combination with Bolon. In particular, the Examiner alleges that the APA discloses all of the features of the claimed invention, except for the high-temperature solder layer coated on the copper wire and the protective layer being composed of an electrically-insulating material resistant to permeation by sulfur compounds. However, the Examiner alleges that Bolon makes up for the deficiencies of the APA. For at least the following reasons, Applicants traverse the obviousness rejection of claims 5 and 6.

As a preliminary matter, independent claim 5 is amended to more clearly define the high-temperature solder layer, and the relationship between the high-temperature solder layer and the protective layer. Applicants submit that these amendments are supported by the original

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disclosure of Applicants' invention (see, for example, Fig. 3; see also, the description of Embodiment 3 at pages 11-13 of the specification).

Accordingly, Applicants submit that Bolon neither discloses nor suggests all of the features of claim 5 (as amended). For example, claim 5 defines a new and unobvious combination of elements that form an electromagnetic device for use in an automotive transmission, wherein the conducting wire of the electromagnetic device has improved short-circuiting tolerance and wire-breakage tolerance. In particular, claim 5 recites, *inter alia*, a high-temperature metallic solder layer coated on the conducting wire and a protective layer coated on the high-temperature metallic solder layer. Further, claim 5 recites that the protective layer is an electrically-insulating material resistant to permeation by sulfur compounds and that the high-temperature metallic solder layer suppresses reduction in adhesive strength between the protective layer and the conducting wire, wire breakage, and short circuiting between the conducting wires.

As set forth in Applicants' disclosure, Applicants submit that the inventive device of claim 5 has the advantage that any sulfur or organosulfur that successfully permeates the protective layer is prevented from reaching the copper conducting wire by the high-temperature metallic solder layer (see pages 11-12, bridging paragraph). That is, Applicants submit that the high-temperature metallic solder is less likely to react with the sulfur and organosulfur compounds than with the copper conducting wire. Therefore, even if the sulfur and organosulfur compounds permeate the protective layer, sulfur compounds are not formed on the surface of the high-temperature metallic solder layer as a result of chemical reactions between the sulfur and

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organosulfur compounds and the high-temperature metallic solder layer. Thus, there is no decrease in the adhesive strength of the protective layer to the high-temperature metallic solder layer. As a result, the short-circuiting tolerance and wire-breakage tolerance of the conducting wire are improved.

In comparison, Applicants submit that Bolon neither discloses nor suggests at least a high-temperature metallic solder layer coated on the conducting wire and a protective layer coated on the high-temperature metallic solder layer, as recited in claim 5. Instead, Bolon discloses a coated conductor 10 consisting of a base wire 11 of metal, a base coat 12 of electrically-insulating, heat resistant, cured resin, and an overcoat 14 of bondable acrylic polymer (see col. 7, lines 9-15; see also, Figs. 2 and 3).

In particular, Applicants submit that Bolon discloses (at best) a base coat 12 of electrically-insulating, heat resistant, cured resin coated on the base wire 11, not a high-temperature metallic solder layer coated on the conducting wire, as recited in claim 5. In fact, Bolon is completely silent with respect to any high-temperature metallic solder layer, either coated on the conductor 10 or otherwise. Moreover, Bolon neither discloses nor suggests any of the advantages provided by Applicants' novel and unobvious combination of elements.

Therefore, Applicants submit that Bolon neither discloses nor suggests a high-temperature metallic solder layer coated on the conducting wire, as recited in claim 5. Moreover, Applicants submit that the resultant combination of the APA and Bolon does not (and cannot) disclose or suggest all of the recitations of claim 5. Furthermore, Applicants submit that neither

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the APA, Bolon, nor any prior art of record provides a motivation for modifying the resultant combination of the APA and Bolon to arrive at the new and unobvious combination of elements recited in claim 5.

Accordingly, for at least the foregoing reasons, Applicants submit that Bolon does not make up for the deficiencies of the APA, as alleged by the Examiner. Thus, the combination of the APA and Bolon neither discloses nor suggests all of the recitations of independent claim 5 (as amended); and therefore, the obviousness rejection of claim 5 (and dependent claim 6) should be withdrawn.

III. New Claims:

Applicants add new claims 7-9 to more thoroughly claim the features of the illustrative, non-limiting Embodiment 3 of the present invention (see page 13, first paragraph, of Applicants' specification).

Applicants submit that new claims 7-9 are patentable at least by virtue of their dependency from independent claim 5. Additionally, Applicants submit that new claims 7-9 are separately and independently patentable over any combination of the cited references at least by virtue of the additional features recited therein.

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IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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PATENT TRADEMARK OFFICE

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1- 4 are canceled.

The claims are amended as follows:

5. (Thrice Amended) An electromagnetic [electromotive] device used in an automotive transmission, said electromagnetic device comprising:

an outer casing;

a moveable shaft supported by said outer casing;

a bobbin disposed inside said outer casing so as to be disposed around said moveable shaft on a common axis with said moveable shaft;

a coil embedded in an outer molding, said coil being constructed by winding a conducting wire onto said bobbin,

a high-temperature metallic solder layer coated on said conducting wire; and [, thereby suppressing reduction in adhesive strength of the electrically-insulating layer to the conducting wire, wire breakage, and short circuiting between said conducting wires,]
a [said preventing means comprising forming said] protective layer coated on said high-temperature metallic solder layer;

wherein said protective layer is [of] an electrically-insulating material resistant to permeation by sulfur compounds; and

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wherein said high-temperature metallic solder layer suppresses reduction in adhesive strength between the protective layer and the conducting wire, wire breakage, and short circuiting between said conducting wires.

6. (Amended) The electromagnetic [electromotive] device according to Claim 5,
wherein said electrically-insulating material resistant to permeation by sulfur compounds is a
thermosetting resin.

Claims 7- 9 are added as new claims.